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Drawings

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original Spec.

United States Patent [19]

Kim et al.

[54] METHOD FOR FILLING CONTACT HOLES
WITH METAL BY TWO-STEP DEPOSITION

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Related U.S. Application Data

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[58] Field of Search 437/192, 195,
437/189, 190, 981

[56] References Cited

U.S. PATENT DOCUMENTS

4,764,484	8/1988	Mo	437/203
4,804,560	2/1989	Shioya et al.	427/125
4,906,593	3/1990	Shioya et al.	437/192
4,956,313	9/1990	Cote et al.	437/195
4,987,099	1/1991	Flanner	437/245



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5,000,818	3/1991	Thomas et al.	437/192
5,063,175	11/1991	Broadbent	437/195
5,069,749	12/1991	Gutierrez	437/192
5,071,789	12/1991	Nakata	437/192
5,084,414	1/1992	Manley et al.	437/192
5,100,817	3/1992	Cederbaum et al.	437/245
5,124,780	6/1992	Sandhu et al.	437/192
5,128,278	7/1992	Harada et al.	437/192
5,470,791	11/1995	Suguro et al.	437/192

FOREIGN PATENT DOCUMENTS

0165320	12/1981	Japan	437/189
0034929	2/1990	Japan	437/192
2-231714	9/1990	Japan	.

OTHER PUBLICATIONS

S. Wolf, "Silicon Processing For The VLSI Era, vol. 2". Lattice Press, 1990, pp. 201-205.

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[57] ABSTRACT

Method for filling contact holes with metals by two-step deposition of selective tungsten layer is disclosed. The selective tungsten thin films are deposited in two steps, thus maximizing the contact filling with tungsten, gaining a stability of metal wires with better step coverage, and enhancing the reliability on semiconductor element.

5 Claims, 3 Drawing Sheets

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